

## Intelligent Differential Quantization of Video Coding

### Abstract

With intelligent differential quantization, a video codec intelligently quantizes  
5 video at differing strength levels within a frame, such as on a macroblock (MB) or a  
group of MB basis. This allows the codec to control bit usage on a finer granularity than  
a frame to meet hardware constraints, as well as providing perceptual optimization by  
coarsely quantizing unimportant regions, while finely quantizing important regions  
within a frame. The intelligent differential quantization uses motion information  
10 gathered from encoding and analysis of the video to classify the importance of different  
regions of the image, and quantizes the regions accordingly. In addition, the intelligent  
differential quantization include efficient signaling of information as to the differential  
quantization strengths in the compressed bit stream.